Magnetospheres High Capability instruments:

Low-Frequency Radar/Plasma Sounder/Radio & Plasma Wave instrument

1. High power, (~kW)
2. High data rate (~Mbps)

Plasma Instrument

1. High data rate (3 Mbps)
2. High power (50 W)

Energetic Particles

1. High data rate (100 kbps)
2. High power (tens of W)

Dust

Unsure, but possibly high power

X-ray imaging spectrometer

Unsure, but possibly high power

Spacecraft accommodation issues for Magnetospheric instruments

1. Magnetic cleanliness (in order to accurately measure magnetic fields)

2. Electromagnetic cleanliness (in order to be sensitive to radar return echos and radio and plasma waves

3. Electrostatic cleanliness (in order to measure low energy charged particles (thermal plasma) and perhaps static electric fields)

4. Nearly 4-pi steradian FOVs for plasma/energetic particle instruments (e.g. use multiple instrument heads, turntables, other)

5. Low-Frequency Radar/plasma sounder/plasma and radio wave instrument requires at least one long electric dipole antenna (~40 meters tip-to-tip (see MARSIS/Mars Express)) and at least two other monopoles of order 10-m long extended in a non-coplanar configuration w.r.t. the dipole. Also, a set of magnetic search coils should be mounted on a boom of length (TDB) meters from the spacecraft.

6. Optical instruments require a clean environment; are there contamination issues associated with the JIMO spacecraft?

7. Some high-priority Jupiter science objectives require science measurements on approach to Jupiter, perhaps as distant as 2 AU.

8. Optical remote sensing of the Jovian aurora is required for long, continuous periods during approach to Jupiter and during spiral orbits between icy satellites. Can this be done without conflict with other remote sensing objectives?

9. Need to understand options for approach/capture trajectories, inclinations at icy satellites, minimum altitudes at icy satellites, options for end-of-mission orbit.

10. Access to DS-1 science environment data (interference from ion thruster)